Vision in dinosaurs: Scaling effects in sclerotic rings

SCOTT LEE, University of Toledo — Sclerotic rings are composed of bones found in the eyes of most vertebrates except mammals and crocodilians. They are believed to have a role in maintaining the shape of the eye. Their inner diameter is an upper limit for the effective diameter of the pupil and, therefore, provides a measure of the light-gathering ability of the eyes of extinct animals. Thirty-six different species of dinosaurs (from both the Saurischian and Ornithischian branches) have been studied. The smallest dinosaurs, with masses less than 1 kg, include Juravenator starki, Archaeopteryx lithographica, and Mei long while the largest dinosaurs, with masses on the order of 10,000 kg, include Diplodocus longus and Nemegtosaurus mongoliensis. The light-gathering properties of the eyes of the dinosaurs are studied as a function of the mass. The sclerotic ring diameter is found to increase with mass.

Scott Lee
University of Toledo

Date submitted: 09 Nov 2016

Electronic form version 1.4